Data vs. Information

Transportation asset management is a data-intensive process, with information management at the core. To fully comprehend this, it is necessary to understand the difference between data and information.

Data are values for various attributes directly related to the asset being measured. This includes descriptions, types and quantities of what is being measured, often in the past, present and forecasted future.

Information is when data are analyzed and presented in a form which supports the decision-making process.

The Importance of Data

For any asset management system to work effectively, appropriate data must be managed. That is, the data must be collected, stored and analyzed. Performance assessment requires reliable data.[12]

Thus, data is to be viewed as a corporate asset, valuable and essential for accomplishing the organizations's strategic plan.

Business needs should drive an organization's data efforts, not the reverse. Decisions regarding the type and amount of data needed are to reflect business process requirements.

Data must also be available to those in the organization who need it to accomplish their tasks and not held as belonging to a particular person or division.

Further, an organization needs to support any changes necessary to keep data relevant and reliable. This necessitates three essential commitments from management: a willingness to provide resources necessary to collect and maintain data; collect only data which is needed to support strategic plan objectives and regulatory requirements; and an understandable and widely distributed data management plan.
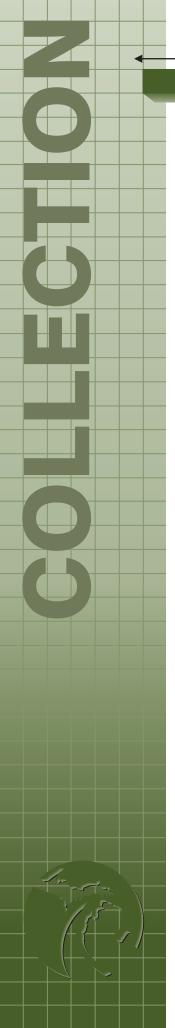
Principles of Data Gathering

The organization, National Performance Review,[13] has identified four basic principles for gathering data needed for asset management. Agencies must keep their data efforts:

- Focused: Keeping data gathering focused is a senior leadership responsibility. A focus ensures the right data are collected, that repetitious or tangential compilations are avoided and that the questions originally posed by the performance measures are being answered.

- Flexible: Although using automation is preferable, world-class organizations also use manual systems when needed and cost-efficient.

- Meaningful: Useful and relevant data can be gathered if correct measures were originally set up. A few basic, well-aligned measures are preferred rather than a number of complex measures. With simple measures, it is clear which data need to be collected. With well-aligned measures, it is easy to see the data's relevance.

- Consistent: Data collection should be based on a set of agreed-upon definitions, universally understood by employees, managers, partners, suppliers and customers. A common framework of understanding provides data to be easily compared and analyzed, allowing subsequent evaluations to be apples to apples.

Data Storage

Once data are collected, they need to be stored. The format selected should allow effective and efficient data use by those who need it. The value of data assets should be maximized by collecting once, storing once and using many times.

As part of the development of the Transportation Management System (TMS),

MDOT undertook an analysis of how we collected, stored and utilized data. This effort was directed at full data integration. The process consisted of identifying which data were needed; developing data definitions; and determining who was responsible for the data. To date, MDOT has reduced approximately 20,000 files to five major databases.

Perhaps more importantly, MDOT efforts have established standards for data and its storage. The Michigan Architecture Program developed data modeling and naming standards, as well as quality assurance and configuration management standards and procedures. Database administration procedures and techniques were part of TMS development. In addition to these standards, MDOT's data collection and storage are compliant with federal guidelines documented in the *Traffic Monitoring Guide* and *Highway Performance Monitoring System Field Manual*.
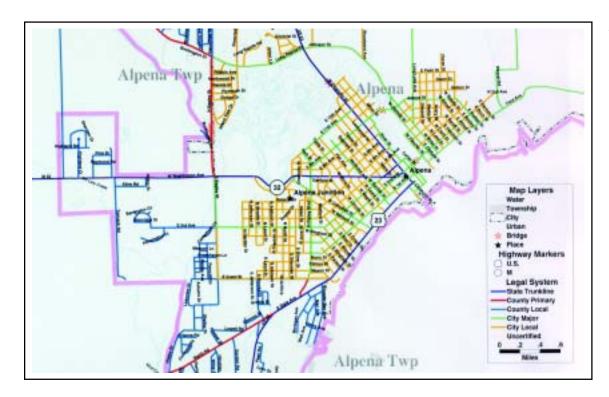
We Know What, Now We'll Know Where

MDOT is employing technological advances in its effort to collect, store and use data efficiently.

- Implementation of global positioning technology eliminates many interim steps between capture of data and its dissemination. This will result in improved data collection processes and reduced collection staff time.

- The Michigan Geographic Framework is a cooperative effort with other state agencies and coordinated by the Department of Management and Budget's Michigan Information Center.

This is a single, statewide geographic information system (GIS) base map which allows all state functions to use a consistent geographic base. The Framework includes all public and private roads and will eventually include all rail, marine and nonmotorized segments.

Many of MDOT's government agency partners, including county road commissions, cities and metropolitan planning organizations have been monitoring and participating in development of Framework. When completed, Framework will provide the foundation by which all agencies can share data without the barriers associated with individual frames of reference.

A strategic objective of the MDOT Business Plan is to become customer driven. The department does this by working in concert with our local agency customers on the Geographic Framework project of the Michigan Information Center.